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Comparing the Characteristics of Schools That Produce High Percentages and Low Percentages of Primary Care Physicians

MICHAEL E. WHITCOMB, M.D., THOMAS J. CULLEN, Ph.D., L. GARY HART, Ph.D., DENISE M. LISHNER, M.S.W., and ROGER A. ROSENBLATT, M.D., M.P.H.

Abstract—To examine whether the medical school environment is important in influencing students to choose careers in primary care, the authors in 1991 compared certain characteristics of the environments of schools that produced high percentages of primary care physicians with those of schools that produced low percentages over a five-year period. The authors used the American Medical Association Physician Masterfile to identify the percentage of graduates of each of 121 medical schools for the period 1981–1985 who entered primary care specialties. They then compared the 25 schools that produced low percentages (22–29%) with the 25 schools that produced high percentages (39–56%). The results demonstrate important differences between the two groups of schools in their commitments to primary care education, their research programs, and their clinical environments supporting required clerkships. The authors conclude that a school's educational environment is an important factor in influencing some students to pursue careers in primary care medicine. *Acad. Med.* 67(1992):587–591.

There is general agreement among contemporary manpower analysts both in government and in the academic community that the supply of primary care physicians should be increased.[1,2] That consensus has its roots in the concerns that policymakers have about the quality of primary care provided by non-primary care specialists, the impact on health care costs of the growing numbers of non-primary care specialists and subspecialists, the adequacy of the supply of primary care specialists to staff health maintenance organizations (HMOs) and other managed-care models for delivering medical services, and the lack of access to basic medical care services in some rural and inner-city communities.

In the face of this apparent need, it is alarming that recent surveys of graduating medical students conducted by the Association of American Medical Colleges (AAMC) have demonstrated a steady decline in the level of medical students' interest in primary care medicine. Data from the National Resident Matching Program substantiate the results of the AAMC surveys. During the period 1986–1991, the number of U.S. medical school graduates who matched in residencies that might lead to a career in primary care (family medicine, internal medicine, and pediatrics) decreased by approximately 20%. To increase the supply of primary care physicians, those in the academic and policymaking communities will have to find ways to reverse these trends.

Medical students generally enter medical school with poorly defined career goals. Many have some idea about the kinds of specialties they would like to practice, although these initial impressions often change by the time students select residency training.[3] Although the specific forces that shape a student's specialty and career choice are not known, it seems intuitively correct that the nature of the educational environment that students confront during medical school must be important in influencing their choices.

To gain insight into whether characteristics of the educational environment influence students to choose careers in primary care medicine, we compared the educational environments of a group of medical schools that produced high percentages of primary care physicians with those of a group that produced low percentages of primary care physicians. We intend that our results should inform the thinking of those in the academic

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and policymaking communities who are seeking ways to increase the supply of primary care physicians.

Method

Our method is described in two general sections: one on study design and the other on data sources.

Study Design

In 1991 we identified the specialty choices of the graduates of 121 of the medical schools in the United States for the years 1981–1985. We excluded from our analysis graduates of the three schools in Puerto Rico and the Uniformed Services University of the Health Sciences. Students who initially enroll in the two-year program at the University of Minnesota–Duluth receive their degrees from other schools. Mercer University School of Medicine did not graduate students during the period 1981–1985. Graduates of the 121 schools who identified themselves as family physicians, general internists, or general pediatricians in the American Medical Association (AMA) Physician Masterfile were considered to be primary care physicians. We used a five-year study period to minimize the effect of year-to-year fluctuations on our analysis. The study period ended with the graduating class of 1985 so that we could be certain that the majority of graduates who were going to choose careers in primary care medicine had completed residency training.

We were able to determine the percentage of the graduates of each medical school who had chosen careers in primary care specialties. From this analysis, we identified a group of 25 schools that had produced high percentages (39–56%) of primary care physicians and a group of 25 schools that had produced low percentages (22–29%) of primary care physicians during the study period. We designated these two groups high-producer and low-producer groups, respectively.

To gain insight into the natures of the educational environments provided by the medical schools in the two groups, we identified the following sets of characteristics for each of the schools in the groups:

Type of Ownership, Location, and Class Size. The schools were classified as private or public, and the region of the country in which each school was located was noted. We arbitrarily divided the schools into those with class sizes equal to or greater than 100 students, and those with class sizes less than 100.

Research Intensity. The schools were classified according to their rankings among all medical schools in the levels of funding received from the National Institutes of Health (NIH) during the period 1977–1985. This period was used because it represented the years that the graduates of 1981–1985 were in school. The schools were classified as being research-intensive if they ranked in the top 30% of schools in NIH funding.

Commitment to Primary Care Education. The academic status of family medicine, the number of affiliated family medicine residency sites, and the sponsorship of an Area Health Education Center (AHEC) were used to assess a school's commitment to primary care education.

Clinical Teaching Site. The primary teaching hospital affiliated with each medical school was classified as a community hospital or academic medical center hospital according to criteria used by the Council of Teaching Hospitals (COTH) of the AAMC. The resident-to-bed ratio, the number of subspecialty fellows on site, the number of family medicine residents on site, the amount of the Medicare Direct Medical Education (DME) payment received, and the per-resident cost were noted for each academic medical center hospital.

We then compared the two groups to determine whether there were important relationships between a school's environmental characteristics and the percentage of its graduates who chose careers in primary care medicine.

Assuming that we would identify such relationships, we planned to examine whether the relationships would hold true for medical schools across the country, by means of the following method: first, to divide all 121 schools studied into quartiles based on the percentage of each school's 1981–1985 graduates who chose careers in primary care medicine and to compare the four groups of schools based on the relationships of their characteristics to percentages of primary care physicians; second, to use Pearson product-moment correlation analysis to test the statistical significances of the relationships for all 121 schools.

Data Sources

The AMA Physician Masterfile updated to December 1989 served as the physician database for this study. The database provides the medical school attended, year of graduation, self-designated specialty, and location for each active physician in the country. The database allowed us to identify the self-designated specialties of the 1981–1985 graduates for each medical school. We recognize that the AMA database does not distinguish between general internal medicine and some of the subspecialties of internal medicine. However, only 15% of the graduates identified themselves as general internists. Based on patterns of subspecialization in internal medicine, we are confident that this figure was not inflated to a significant degree by subspecialists.

The size, location, and ownership of each medical school were obtained from the annual *AAMC Directory of American Medical Education* for the years 1981–1985. Information on the amount of NIH funding that each medical school received during the years 1976–1985 was obtained from the NIH. Information on sponsorship of AHECs was obtained from the Health Resources and Services Administration, Public Health Service. The academic status of family medicine and the number of affiliated family medicine residency sites for each medical school were obtained from reports published by the American Academy of Family Physicians. Data on Medicare DME payments to

teaching hospitals (for Fiscal Year 1986) were provided by the Health Care Financing Administration (HCFA). Specific information about the characteristics of academic medical center hospitals was not available for the 1981–1985 period. We were able to find 1988 data published by COTH. We consider that the conclusions we reached about the institutions from the 1988 data adequately reflect differences in the institutions that existed during the 1981–1985 period, since the characteristics of the institutions that we were interested in change very little on a yearly basis.

Results

In the aggregate, 34% of the medical students who graduated in the years 1981–1985 chose careers in primary care medicine. There was, however, wide variation among the medical schools in the percentages of graduates who chose primary care careers. For the majority of schools (71 of the 121 schools included in our study), the percentages of their graduates choosing primary care careers clustered in a narrow range (30–38%). Twenty-five schools produced fewer primary care physicians (range, 22–29%), and another 25 produced more primary care physicians (range, 39–56%). These two groups were designated the low-producer and high-producer groups, respectively. The marked disparity between these two groups in the production of primary care physicians was caused primarily, but not entirely, by differences in the production of family medicine physicians.

Table 1 provides a comparison of the characteristics of the medical schools in the two groups. Some of the striking differences between the groups are summarized in the following paragraphs.

Size, Location, and Ownership. The low-producer group consisted mainly of private schools with class sizes of more than 100 students located predominantly in the Northeast. In contrast, the high-producer group consisted mainly of public schools with class sizes of fewer than 100 students. The high-producer schools were more evenly distributed throughout the South, Midwest, and West.

Research Intensity. Eighteen of the low-producer schools, but only four of the high-producer schools, were research-intensive schools. Eight of the low-producer schools ranked in the top 10% (12 schools) of all schools in NIH funding. Only one of the high-producer schools ranked in the top 10%.

Commitment to Primary Care Education. All of the high-producer schools had granted departmental status to family medicine. The majority of these schools were affiliated with three or more family medicine residency teaching sites and had sponsored AHECs. In contrast, only nine of the low-producer schools had granted family medicine departmental status. Twelve of the low-producer schools had no affiliation with a family medicine residency teaching site, and only two had sponsored an AHEC.

Clinical Teaching Site. Ten of the

Table 1

Comparison of Characteristics of 50 Medical Schools That Produced High Percentages and Low Percentages of Primary Care Physicians, Classes of 1981–1985*

Characteristics	No. Schools	
	Produced High % ($n = 25$)	Produced Low % ($n = 25$)
Ownership		
Private	4	21
Public	21	4
Location		
Northeast	2	13
South	10	5
Midwest	7	4
Southwest	1	2
West	5	1
Class size		
>100	8	21
<100	17	4
NIH funding		
Top 10%	1	8
Second 10%	2	5
Third 10%	1	5
Primary care program		
Family medicine department	25	9
At least 3 GME sites in family medicine	14	3
AHEC sponsor	16	2
Teaching hospital		
Community hospital	10	0
Academic medical center hospital	15	25
>600 beds	1	20
Family medicine GME	14	8

*To examine whether the medical school environment is important in influencing students to choose careers in primary care, the authors in 1991 compared certain characteristics of the environments of the 25 U.S. schools that produced high percentages of primary care physicians (39–56%) with those of the 25 schools that produced low percentages (22–29%) during the years 1981–1985. The schools' characteristics included their rankings among all medical schools in the levels of funding received from the National Institutes of Health (NIH), their sponsorships of an Area Health Education Center (AHEC), and their degrees of involvement in graduate medical education (GME).

Table 2

Relationship between Production of Primary Care Physicians and Characteristics of Educational Environment for Quartiles of 121 Medical Schools, Classes of 1981–1985*

Quartile	No. Schools	Primary Care Physicians Graduated		% Having Family Medicine Departments	Average Annual NIH Funds in Millions of Dollars	Average Annual Medicare DME in Millions of Dollars
		Mean %	% Range			
1st 25%	30	43	38–56	94	7.4	1.6
2nd 25%	30	36	35–38	97	5.8	2.9
3rd 25%	30	33	30–35	90	10.7	2.9
4th 25%	31	27	22–30	47	20.3	6.8

*In 1991 the authors divided 121 U.S. medical schools into quartiles based on the percentage of each school's 1981–1985 graduates who chose careers in primary care; the authors then compared the four groups of schools based on the relationships of the characteristics of their educational environments to the percentages of primary care physicians they graduated. The schools' characteristics included their NIH (National Institutes of Health) funding and the Fiscal Year 1986 Medicare DME (direct medical education) payments to their affiliated academic medical center hospitals.

high-producer schools used community hospitals as their major sites for teaching clinical medicine. Fourteen of the 15 academic medical center hospitals that served as the primary teaching sites for the remaining high-producer schools had family medicine residents on site. Fourteen of these hospitals had fewer than 600 beds. In contrast, the major teaching site for each of the low-producer schools was an academic medical center hospital. Only eight of these hospitals had family medicine residents on site. Twenty of the hospitals had more than 600 beds.

The results of the analysis of whether the relationships between a school's production of primary care physicians and its environmental characteristics would hold true for all 121 schools are shown in Table 2. Of particular interest is the inverse relationship between the production of primary care physicians and receipt of federal support in the form of either NIH funding to the school or Medicare DME payments to the school's major affiliated hospital. The results are consistent with those we determined for the high-producer and low-producer schools. For all schools, the percentage of a school's graduates who chose careers in primary care medicine was negatively correlated with NIH funding to the school ($r = -.44$, $p < .01$) and with Medicare DME payments to the school's affiliated academic medical center hospital ($r = -.23$, $p < .05$).

Discussion

The results of our study provide several new observations about the supply of primary care physicians produced by the nation's medical schools. First, our results demonstrate for the first time the degree of variation that exists among the schools in the percentages of the schools' graduates who choose careers in a primary care specialty. Although the production of primary care physicians is about the same for the majority of schools, some schools are clearly low producers and some are high producers. The disparity between the latter two groups of schools in the production of primary care physicians is primarily, but not entirely, caused by differences in the production of family medicine physicians. Second, our results demonstrate differences in the characteristics of the educational environments of low-producer and high-producer schools that may well have an important influence on whether certain students select primary care or non–primary care specialties. Although the differences between the two groups of schools may be somewhat intuitively apparent, our study is the first to document these differences.

It is possible that the marked difference in the production of primary care physicians by the two groups of schools could be partially explained by the impacts that the schools' reputations might have had on students' decisions about which medical school to attend. For instance, some undergraduates might apply only to medical schools that have reputations that best fit the students' perceptions about their career plans. Similarly, students who hold multiple acceptances to medical schools may ultimately choose to enroll in schools that have educational environments that best fit the students' preconceived notions of their specialty interests. If that occurred frequently, it would affect a school's record of producing primary care or non–primary care specialists. This would, in turn, tend to exaggerate the importance of the educational environment in influencing medical students' career choices. We do not believe that many students actually make choices about which medical schools to attend in that manner. Thus, we believe that the natures of the schools' educational environments are primarily responsible for the marked disparity in the production of primary care physicians by the two groups of schools we analyzed.

It is evident from Table 1 that there were schools in both groups that did not entirely fit the group profiles. In that regard, a group of four schools within the high-producer group is of most interest. The four schools were research-intensive schools, had large class sizes, and provided the required student clerkships in academic medical center hospitals that tended to be larger than those affiliated with other

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schools in the high-producer group. Three of the four schools are located in major urban centers. In a number of important ways, therefore, these four schools fit the profile of the low-producer group.

Each of those schools, however, also had a very strong commitment to primary care medicine. Each school had granted departmental status to family medicine, was affiliated with at least three family medicine residency sites, and had sponsored an AHEC. In fact, these four schools are recognized as having exemplary primary care educational programs.

The high productivity of the four schools underscores two important points. First, all of the schools in the high-producer group had strong commitments to primary care medicine. Second, there is no inherent conflict between a strong commitment to primary care medicine and a commitment to a strong research program. These points should not be overlooked by medical educators and policymakers as they consider how medical schools might increase the percentages of their graduates who choose careers in primary care medicine.

There is no doubt that most of the "messages" provided by society tend to encourage students to select careers in non-primary care specialties. This is particularly true with regard to the relative prestige and financial rewards attached to being a primary care or a non-primary care physician. Since all of the students confronted similar societal forces during the period we studied, we believe that the differences we observed between the high-producer and low-producer groups of schools were probably related to how the educational environments provided by the medical schools reinforced or neutralized the pressure to select a non-primary care specialty. Our observations suggest that a research-intensive, specialty-oriented environment will influence students to choose non-primary care careers and that the nature of a school's primary care educational program is probably very important in influencing some students to choose careers in primary care specialties.

The declining interest in primary care medicine careers by medical school graduates is alarming. To reverse this trend, government officials must attempt to deal with the societal forces that influence students' career choices. At the same time, medical educators must become more vigorous in addressing those factors under the control of the medical school that influence students to choose careers in non-primary care medicine. The results of our study suggest that the medical education community could begin by recommending that all medical schools introduce specific educational programs designed to influence students at least to consider careers in primary care medicine. Detailed analyses of the curricula of the high-producer schools identified in this study should provide information that will be useful in this effort.

Although we believe that all schools should participate in the effort to increase the supply of primary care physicians, we recognize that there are clear differences in the ways that medical schools perceive their roles and missions. That is as it should be. Many of the nation's medical schools have a long tradition of emphasizing research and the training of non-primary care specialists. It is not easy to make the educational environment of such a school more supportive of careers in primary care medicine. Indeed, it may be almost impossible for such a school, because of its tradition, location in a heavily populated metropolitan area, or lack of resources, to develop a primary care program that would have a real impact on its educational environment. There is no reason that all medical schools should have the same commitment to primary care medicine. Those interested in developing programs to increase the supply of primary care physicians, particularly foundation directors and government officials, should recognize the diversity of the nation's medical schools and target available resources to schools that have the greatest likelihood of being successful in this effort.

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SHORT PAPERS

Health Education Programs in U.S. Medical Schools

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Abstract—To examine the status of teaching programs on health education in undergraduate medical education, the author in 1990–91 surveyed representatives of all 126 U.S. medical schools. Of the 97 institutions that responded, 63 (65%) offered instruction in patient education and 72 (74%) offered instruction in community health promotion. The responses indicated that a number of departments participated in instruction and that diverse methods of instruction and evaluation were used. Opinions of the representatives regarding the importance and adequacy of instruction in health education were quite favorable. The author concludes that more information is needed to determine the effectiveness of the instructional programs and their impact on the quality of medical care. *Acad. Med.* 67 (1992):596–598.

The health education skills of physicians are an integral element of quality medical care. Health education is defined as "the use of the education process to assist individuals to voluntarily adopt or alter behaviors that will improve or maintain their health."[1] Health education skills may be divided into two separate components: *patient education* (the teaching of individual patients) and *community health promotion* (the education of groups of people or of the community as a whole).

In 1980 the U.S. Surgeon General produced a set of 370 specific objectives for health promotion and disease prevention.[2] Analysis of these objectives revealed that 16% pertain to health education.[3] However, the majority of physicians in several surveys believed that they are unlikely to be very successful in affecting most health behaviors of their patients.[4,5] A 1979 study reported that 96% of all U.S. medical schools had a specific course for teaching interpersonal skills.[6] However, only 27% of those programs included instruction in patient education skills. Little, if any, evidence is available to suggest that significant changes have occurred in the past 12 years. Thus, before initiating reforms, proponents of health education training should determine the present status of instructional programs on health education in U.S. medical schools.

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Method

The present, descriptive study was based on a survey using a questionnaire developed from a review of the pertinent literature. The content validity of the questionnaire was verified by a panel of recognized experts in medical education and patient education to minimize the possibility of measurement error. The questionnaire was mailed to the representative of each U.S. medical school identified in the *1990–91 AAMC Curriculum Directory* (of the Association of American Medical Colleges) as the contact person for that institution. Two mailings were conducted to maximize the response rate. The confidentiality of all the contact persons was maintained throughout the study.

The questionnaire distinguished the areas of patient education and community health promotion and addressed each area separately. The questions concerned the presence or absence of instruction in each area; the department(s) responsible for the instruction; the timing of the instruction; the instructional and evaluative methods employed; opinions on selected statements about the importance of health education instruction; perceived obstacles to the development of health education programs; and demographic data regarding the individual contact persons. The responses regarding opinions on the importance of health education instruction were given using a six-point, Likert-type scale, ranging from 1, strongly disagree, to 6, strongly agree.

Results

Responses were received from 97 of the 126 medical schools surveyed, for a response rate of 77%. Of these institutions, 63 (65%) reported that they offered instruction in patient education, and 72 (74%) reported that they offered instruction in community health promotion. Table 1 identifies the departments most commonly involved in those areas.

A majority of the programs were described as involving multiple instructional and evaluative methods. Typically, instruction included a combination of lectures during the preclinical years (the first two years of school) and practical activities or elective rotations during the clinical years (the third and fourth years of

school). Evaluation involved written examination questions during the preclinical years and clinical encounters with actual patients (not simulated patients) during the later years.

An overwhelming majority of the contact persons agreed, ranging from slightly agree to strongly agree, that skills in patient education and in community health promotion "should be taught to all medical students" (98% and 96%, respectively). However, much lower percentages agreed that the areas are "given adequate curriculum time" (49% for patient education and 45% for community health promotion). About three-fourths of the contact persons agreed that "most students graduate with an appropriate level of skill" in each area.

Of the 95 contact persons who responded to the question regarding obstacles to health education programs, 80 (84%) identified one or more obstacles. Lack of curriculum time was the obstacle most frequently selected (68, 72%). Lack of interested faculty (36, 38%), lack of trained faculty (27, 28%), and lack of teaching materials (10, 11%) also were commonly identified. Other obstacles described were lack of faculty awareness, absence of faculty role models, lack of funds for curriculum development, lack of emphasis by health care policymakers, poor acceptance by students, and the notion that health education material is "not on the boards."

Table 1

Medical School Departments Involved in Health Education Programs, 1990–91*

Department†	Schools Teaching Patient Education ($n = 63$)		Schools Teaching Community Health Promotion ($n = 72$)	
	No.	%	No.	%
Family medicine	31	49	43	60
Community/preventive medicine	19	30	47	67
All departments	17	27	2	3
Internal medicine	16	25	10	14
Pediatrics	6	10	2	3
Psychiatry	5	8	1	1
Others	9‡	14	7§	10

*In 1990–91 the author surveyed all 126 U.S. medical schools to examine the status of teaching programs on health education; 97 schools responded, indicating that 63 of them teach patient education and 72 teach community health promotion. The schools also listed their departments that are involved in teaching the two areas of health education. (Percentages may total more than 100% because responsibilities are frequently assumed by more than one department.)

†For patient education, six schools (10%) listed courses in introduction to clinical medicine/doctor–patient relationship as providing instruction.

‡Other departments were obstetrics–gynecology, psychology, behavioral sciences, surgery, and pharmacology.

§Other departments were obstetrics–gynecology, public health, medical humanities, and surgery. In addition, "interdepartmental" and courses in introduction to clinical medicine were listed.

Discussion

The results indicate that most medical schools do make provisions for health education instruction, in the areas of both patient education and community health promotion. Despite the possibility of schools' over-reporting their educational activities, these results differ substantially from the findings of an earlier study by Kahn and colleagues.[5] The difference may be due partly to the fact that the previous study examined only courses in interpersonal skills and not the undergraduate curriculum as a whole. Nevertheless, the present findings regarding educational programs in the majority of institutions (with several other schools reporting new programs being developed) are encouraging.

The opinion measures on the questionnaire yielded highly favorable rankings from the contact persons. However, these items do not represent a definitive measure of attitudes toward health education instruction among all medical educators. Neither the population of this study (which included only one representative of each institution) nor the structure of the questionnaire (which included only eight items for each area) was sufficient to formulate a complete measure of attitudes. Despite those limitations, the positive responses of the study population are encouraging to proponents of undergraduate health education instruction.

The most prevalent obstacle to health education instruction identified in this study was lack of curriculum time. Demands on curriculum time will only increase in the future as the realm of medical knowledge continues to expand. The distribution of curriculum time is a reflection of the values of the administrators and educators who conduct curriculum development. If health education skills are to gain importance in medical education, commitment must begin at the highest levels.

While this study revealed that most institutions make provisions for the training of health education skills, the data neither prove nor disprove the adequacy of those efforts or the overall importance of health education skills in the undergraduate medical curriculum. Thus, much more research is needed to determine the effectiveness of medical education in training physicians to be successful in educating patients.

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Teaching the Process of Obtaining Informed Consent to Medical Students

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Abstract—This paper describes a unit on the informed consent process taught to 119 first-year students at the Michigan State University College of Osteopathic Medicine in 1988–89. The unit consisted of a pretest and a posttest, a lecture, readings, small-group discussions, a model videotaped interview, and the students' videotaped interviews with one of two simulated patients. In the interviews, the students were most successful in establishing rapport and engaging the patients in discussions of treatment alternatives, and were less successful in perceiving the patients as unique individuals and in dealing with situations that involved conflict or confrontation. The authors suggest that curricula can be enhanced by focusing on the importance of patients' participation in the informed consent process. *Acad. Med.* 67(1992):598–600.

Informed consent within the doctor–patient relationship has legal, ethical, social, and emotional ramifications for both patients and physicians. Currently, in the United States, a competent adult patient has the legal and ethical right to make decisions regarding medical treatments. The patient has the right to be informed about the nature of the existing condition, the purpose of treatment, and specific risks and benefits associated with alternative treatments.[1]

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In theory, informed consent has been accepted as an essential component of the doctor–patient relationship; in actuality, physicians frequently fail to communicate elements essential for informed participation by patients.[2] There are several reasons physicians may be reluctant to disclose appropriate information to patients.[3–5] However, although many physicians favor a relatively noninformative, paternalistic approach to the doctor–patient relationship, studies reveal that most patients desire more relevant information about their conditions, including specific facts regarding their diagnoses.[6] The failure of physicians to discuss relevant information with patients, and the patients' perception that physicians are unwilling to spend time listening to their concerns, are two factors most often associated with malpractice suits.[7] Moreover, in view of social changes germane to improved health care, growing public awareness of medical matters, and new therapies that necessitate increased patient cooperation, it becomes expedient for physicians to involve patients in discussions about their health care.[4]

Despite pressures to integrate the informed consent concept into routine doctor–patient relationships, few physicians have received formal instruction in the process. Usually, a physician's exposure to the informed consent process is through observation of other physicians as they function in accordance with established hospital policies. Learning is restricted, as these interactions seldom depict the informed consent process fully or accurately.[5] It should be noted that on those occasions when the concept of informed consent is formally addressed in medical school, it typically takes the form of a brief, superficial lecture in the preclinical medical ethics curriculum.[8]

In response to the paucity of instruction in medical curricula relating to informed consent, the authors

How the Topic of Homosexuality is Taught at U.S. Medical Schools

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Abstract—In 1991 the authors surveyed all U.S. medical schools to assess both the number of curriculum hours devoted to the topic of homosexuality and the instructional strategies employed in its academic treatment; responses were sought from faculty with responsibility for teaching the topic (mostly directors of medical student education in psychiatry). Of the 126 schools, 82 (65%) responded. The mean number of hours reported was 3 hours and 26 minutes, with significant differences based on geographic region. The most frequently cited strategy was lectures in human sexuality, followed distantly by panel presentations and meetings with gay men or lesbians (both health care providers and others). To enhance sensitivity and comfort with gay and lesbian issues and to counter stereotypic responses, the authors propose that the topic of homosexuality be wholly integrated throughout the curriculum. *Acad. Med.* 67(1992):601–603.

Among the areas assessed in our recent survey of support services for gay and lesbian medical students was the way in which the subject of homosexuality was addressed in the medical school curriculum.[1] The perception of 72 students (self-identified as homosexuals) at 61 schools was that the topic was taught mainly through lectures in human sexuality, despite their reported preference that it be addressed in all course work.

Results of the original study stimulated further exploration of how faculty with curricular responsibility for presenting information on homosexuality view the topic's academic treatment at their institutions. Students at different levels of training are necessarily limited in their views of the entire curriculum, while it is likely that faculty would have a more inclusive perspective.

Method

One of the authors (MMW) designed a brief questionnaire to assess the number of curricular hours devoted to the topic of homosexuality, instructional strategies currently employed, and additional desirable ways in which the subject might be effectively addressed. We surveyed all 126 U.S. medical schools accredited by the Liaison Committee on Medical Education of the Association of American Medical Colleges and the American Medical Association. The questionnaire was distributed in June 1991 at the annual meeting of the Association of Directors of Medical Student Education in Psychiatry; directors not attending the meeting were sent a copy by mail. Each director was asked whether another department presented information on homosexuality and, if so, to identify the appropriate contact person for follow-up. In the 13 cases where multiple responses were received, statistics for the institution were pooled.

Results

Of the 126 schools surveyed, 82 (65%) completed the questionnaire. The responses came from 38 states and the District of Columbia, with more from the South (30) and the North Central region (25) and fewer from the Northeast (17) and the West (10). While large schools (137 or more students) and small schools (fewer than 137 students) were almost equally represented (51% and 49%, respectively), more responses came from public schools (67%) than from private schools (33%). (The designation of school size was based on the criterion used in our previous survey.)

No significant differences were found on the basis of class size or institutional affiliation. However, the mean number of curriculum hours devoted to the topic of homosexuality was greatest in the West (5 hours and 56 minutes versus 2 hours and 37 minutes or less for the other regions, $p < .05$). The mean response for all the schools, regardless of region, was 3 hours and 26 minutes. Overall, the most commonly reported instructional strategy was lectures in human sexuality, followed distantly by panel presentations and meetings with gay men or lesbians, both health care providers and others. Table 1 summarizes these findings.

After answering questions concerning specific instructional strategies, the faculty were asked to specify other methods used in presenting information on homosexuality; the most frequently cited was small-group discussion (11 schools). Only one faculty member reported gay and lesbian issues as being "integral to most current teaching" (which was the expressed preference of the students in our previous survey). Eight faculty indicated the topic's total absence in the curriculum, a disturbing finding, identical in percentage to the earlier report by the students. One director reported that homosexuality is addressed only in the context of illness related to HIV (human immunodeficiency virus); in all, 12 faculty members indicated the topic's treatment in the discussion of acquired immunodeficiency syndrome (AIDS).

As to additional desirable ways in which the topic might be effectively

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Table 1

Instructional Strategies and Curriculum Hours Devoted to Teaching about Homosexuality in 82 Medical Schools, 1991*

Strategy	% and No. Schools Using Strategy ($n = 82$)									
	In at Least One Year		In Freshman Year		In Sophomore Year		In Junior Year		In Senior Year	
	%	No.	%	No.	%	No.	%	No.	%	No.
Lecture(s) on human sexuality	79.3	65	40.2	33	45.1	37	9.8	8	2.4	2
Meetings with gays and lesbians	40.2	33	19.5	16	20.7	17	2.4	2	0.0	0
Panel presentation on human sexuality	40.2	33	20.7	17	20.7	17	0.0	0	0.0	0
Case vignettes in psychiatry	31.7	26	3.7	3	9.8	8	20.7	17	4.9	4
Film	25.6	21	9.8	8	0.0	0	1.2	1	0.0	0
Lecture(s) on medical ethics	19.5	16	14.6	12	4.9	4	2.4	2	1.2	1
Case vignettes in physical diagnosis	19.5	16	2.4	2	13.4	11	3.7	3	1.2	1
Case vignettes in medicine	11.0	9	0.0	0	2.4	2	7.3	6	2.4	2
Panel presentation on medical ethics	9.8	8	6.1	5	3.7	3	0.0	0	0.0	0

Mean No. Hours Devoted to Teaching about Homosexuality				
Total	Freshman Year	Sophomore Year	Junior Year	Senior Year
3 hr, 26 min	1 hr, 17 min	1 hr, 29 min	29 min	11 min

*In 1991 the authors surveyed appropriate faculty (mostly directors of medical student education in psychiatry) at all 126 U.S. medical schools to assess both the number of curriculum hours devoted to the topic of homosexuality and the instructional strategies employed in its academic treatment; faculty from 82 schools (65%) responded.

addressed, the faculty members' open-ended responses included "use of case material throughout the curriculum" (three schools), "integration throughout the clinical years" (three schools), and "inclusion in physical diagnosis and interviewing" (two schools). Two faculty members expressed the need — and their desire — to reduce prejudice against homosexuality, with their planned approaches unspecified.

Discussion

The respondents in our previous study of the academic treatment of homosexuality were gay and lesbian medical students at all levels of training. Although admittedly they are a select group, it is likely that their vested interest in the topic assured a thoughtful, reasoned response. However, a downside of their varied levels of training is that the students in the basic science years were not likely to be aware of the topic's subsequent academic treatment in the clinical years.

In contrast, a more inclusive perspective would be expected of faculty with responsibility for presenting information about homosexuality. We initiated our inquiry with directors of medical student education in psychiatry, based on the conventional wisdom that the topic is most often included first in the behavioral sciences and later in psychiatry training. But we encouraged each director to identify appropriate contact persons for follow-up in departments other than his or her own.

For 45 cases representing 39 institutions, we were able to match the responses of the students from our previous study with those of the faculty from the present study; response agreement between the two groups was 70% across all the strategies. In the cases in which a faculty member's report of a utilized strategy contradicted the corresponding student's report (19%), it is likely that the student's exposure to the method may occur later in his or her training. More difficult to explain are the infrequent cases (11%) in which a student indicated a particular strategy's use in contradiction to a negative report by a faculty member. Such occurrences may represent the latter's lack of knowledge concerning the subject's academic treatment by another department; this possible lack of knowledge is one limitation of our study.

The major findings of the current study are remarkably consistent with those of our earlier research. The faculty and the students agreed that the topic of homosexuality is taught mainly through lectures in human sexuality, followed distantly by panel presentations and meetings with gay men or lesbians. Such marginalization in the curriculum may trivialize the topic's importance in the minds of both faculty and students.

In responding to our query of how the subject might be effectively addressed, one faculty member suggested the need for "an acceptable, less threatening way to teach it." This apparent lack of comfort in discussing gay and lesbian issues may be due to lingering remnants of homosexuality's earlier association with deviance and psychopathology. It may also be related to its frequent current inclu-

sion in instruction regarding HIV, thus linking homosexual identity—and not high-risk behaviors irrespective of sexual orientation—with a frightening pandemic illness.

Perhaps the students' recommendation (shared by three faculty members) that the topic be addressed across the entire spectrum of medical education should be followed. We propose that teaching about the care of gay and lesbian patients be wholly integrated throughout the curriculum, from the basic sciences and introductory clinical courses through the full range of clinical experiences. Only in that way can faculty members' and students' sensitivity and comfort with gay and lesbian issues be enhanced, and stereotypic responses be countered.

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Assessing Personal Occupational Safety and Health Training for Students at U.S. Medical Schools

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Abstract—Medical students potentially are exposed to numerous occupational hazards. This study examined the training and preventive measures medical schools use to protect the health and safety of students. In late 1990, questionnaires were mailed to the 126 schools in the United States. One hundred (79%) responded, reporting numerous incidents of illness and injury. Of the 100 schools, 60 agreed with the statement that their students were adequately prepared to work safely; 11 disagreed, and 24 gave neutral responses (five did not respond to the statement). However, 36 indicated that they planned to revise health and safety training. The authors recommend that schools adopt policies, procedures, and a uniform curriculum regarding students' occupational safety and health. *Acad. Med.* 67(1992): 603–605.

Health care workers employed at medical schools and teaching hospitals routinely encounter a wide variety of occupational hazards.[1,2] As a result, training in health and safety is now required to reduce workers' risks of injury and illness. Unfortunately, medical students, who represent a significant portion of the health care work force within teaching institutions, are not always included in formal health and safety training programs.

We surveyed medical school administrators about students' injuries, illnesses, immunizations, and training in occupational safety and health. Information was also collected on institutional policies regarding potential health and safety hazards that medical students face during their training.

Medical students often are unaware of potential environmental hazards during their training.[3] Moreover, proper training seems to be lacking at the undergraduate level, especially with regard to safe laboratory practices.[4] Lack of training is compounded by the lack of reporting of injuries and illnesses among health care workers.[5] Thus, the data on the frequency of illness and injury among medical student health care workers are inadequate and may be inaccurate.

Method

Questionnaires were mailed to the deans of student affairs and the deans of the medical schools at the 126 institutions in the United States. After approximately eight weeks, a second mailing was sent to nonrespondents. There were no identifiers on the questionnaire to link any response to a particular school. Primarily descriptive statistics were used to analyze the data.

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Comparing the Transfusion Medicine Content of the NBME's Examinations in 1984–1985 and 1989–1990

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Abstract—Recognition of the seriousness of transfusion-transmitted diseases has been demonstrated by U.S. medical schools through the integration of transfusion medicine (TM) content into their curricula. To evaluate the degree to which these changes in curricula have been reflected in the National Board of Medical Examiners' (NBME) examinations, a study conducted in 1991 evaluated the proportions of TM-related items on Parts I and II of the NBME examinations for 1984–1985 versus 1989–1990. Both Part I (basic sciences) and Part II (clinical sciences) demonstrated significant gains in TM items between the comparison periods ($p < .001$), with Part II having the higher gain. An analysis of students' knowledge revealed that students in 1989–1990 tended to perform better on TM items than on examination items generally. The increases in TM content and student performance on TM items on the 1989–1990 examinations suggest that the national effort to expand and improve teaching of TM in U.S. medical schools has been effective. *Acad. Med.* 67(1990):608–610.

Transfusion medicine (TM) has evolved during the last quarter century from traditional blood banking, primarily concerned with cross-matching and blood storage, into a complex clinical and research discipline.[1] U.S. medical schools' curricula have reflected the emergence of TM through integration of TM topics into existing courses and the addition of required and/or elective courses in TM.[2] Transfusion medicine education has gained momentum in medical education primarily for three interrelated reasons: (1) the increasing complexity of transfusion practice; (2) the Transfusion Medicine Academic Awards (TMAA) for faculty and curriculum development provided by the TMAA group of the National Heart, Lung, and Blood Institute; and (3) the recognition of the seriousness of transfusion-transmitted diseases.

In 1986 some of the TMAA awardees formed a task force to assess the status of TM in medical education through an analysis of the TM content of Part I and Part II of the 1984 and 1985 National Board of Medical Examiners' (NBME's) tests.[3] The NBME tests were selected as a measure of TM because they "are a reflection of the content of U.S. medical curricula," according to the Council on Medical Education of the American Medical Association.[4]

The 1986 TM task force found that approximately 5% of Part I and 2% of Part II items of the 1984–1985 tests were related to TM. In the five years since that study was conducted, TM has continued to gain momentum in undergraduate medical education: 15 additional TMAAs have been granted to individuals affiliated with medical schools, and the impact of AIDS (acquired immunodeficiency syndrome) on medical education has continued to increase. Therefore, in 1991 a new TM task force was created to determine the degree to which the examinations reflect the increased TM content of medical school curricula. A second goal was to assess students' knowledge of TM content. The findings of this replication study were compared with the baseline data gathered on the 1984–1985 NBME examinations.

Method

Four physicians specializing in TM and four educators affiliated with the TMAA program constituted the 1991 task force. Of these, three physicians and one educator had been members of the original task force. Each item from the June Part I administration and the April Part II administration of the 1989 and 1990 NBME examinations was reviewed by two or more TM physicians and coded as "related" or "not related" to TM. For the items related to TM, the physician raters coded the items into topic areas, using as coding categories the curriculum objectives of the curriculum committee of the TMAA group.[5] Chi-square tests were used to compare the data from the 1989–1990 examinations with those from the 1984–1985 examinations.

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Table 1

Comparison of the Mean Difficulty Indices, Numbers, and Percentages of (1) Transfusion Medicine Items and (2) All Test Items on the NBME Part I and Part II Examinations in 1984–1985 and 1989–1990*

	Transfusion Medicine Items					All Test Items				
	Mean Difficulty Index as %†			No. and (%) Items		Mean Difficulty Index as %†			No. Items	
NBME Section	1984–1985	1989	1990	1984–1985	1989–1990	1984–1985	1989	1990	1984–1985	1989–1990
Part I										
Anatomy	70	98	67	6 (2)	2 (1)	69	67	63	284	238
Physiology	81	59	77	7 (2)	9 (4)	70	66	66	281	237
Biochemistry	64	72	72	22 (8)	18 (7)	66	62	62	280	242
Pathology	64	71	56	24 (9)	29 (12)	65	66	65	281	243
Microbiology	70	67	70	25 (9)	44 (18)	66	64	66	275	242
Pharmacology	65	73	67	11 (4)	16 (7)	66	64	65	271	225
Behavioral sci.	NA	74	74	0 (9)	6 (3)	66	62	65	269	244
All sections	67	70	68	95 (5)	124 (7)	66	64	65	1,941	1,671
Part II										
Medicine	70	72	73	15 (9)	30 (12)	66	69	66	307	260
Surgery	69	74	67	7 (2)	25 (10)	65	65	58	305	252
Ob.–gyn.	66	60	62	10 (3)	18 (7)	63	65	61	304	258
Prev. med–public health	56	82	75	3 (1)	26 (10)	67	70	70	303	261
Pediatrics	47	71	76	10 (3)	25 (10)	63	63	63	303	258
Psychiatry	NA	37	75	0 (0)	2 (1)	64	64	66	301	257
All sections	64	71	72	45 (2)	126 (8)	64	66	64	1,832	1,546

*A national task force in transfusion medicine (TM) was created in 1991 to (1) determine the degree to which the National Board of Medical Examiners (NBME) Part I and Part II examinations reflected increased TM content in medical school curricula, and (2) assess students' knowledge of TM content. Data from the examinations of 1984–1985, collected by a previous task force, were compared with data from the 1989–1990 examinations.

†A mean difficulty index is the average of the percentages of students who gave correct answers per item within an NBME section. For example, for the TM items in the anatomy section in 1990, an average of 67% of the students correctly answered a given item.

Results

A total of 3,217 items, 1,671 from Part I and 1,546 from Part II, of the 1989–1990 examinations were reviewed. Of those items, 250 (7.7%) were identified as TM-related, in contrast to 140 (3.7%) in 1984–1985 (see Table 1). A significant increase in the number of items for the combination of Part I and Part II of the 1989–1990 versus 1984–1985 examinations was obtained ($p < .001$), with Part II having the greater increase. More specifically, the number of TM-related items on Part I increased from 95 (5%) in 1984–1985 to 124 (7.4%) in 1989–1990. On Part II, TM-related items increased from 45 (2%) in 1984–1985 to 126 (8.2%) in 1989–1990 ($p < .001$).

On the 1989–1990 examinations, microbiology section (44 items) and the medicine section (30 items) had the highest numbers of TM items. The greatest gains in TM items on Part II were in the surgery section, from seven (2%) to 25 (10%), and the preventive medicine/public health section, from three (1%) to 26 (10%).

The TM items of the 1989–1990 examinations covered nine of the 12 topic areas recommended for medical school curricula by the curriculum committee of the TMAA group. The curriculum committee recommended that curricula cover the following topic areas within TM: history, scientific basis, blood components, crossmatching, clinical transfusion, reactions, autoimmunity, transplantation, pheresis, blood substitutes, medicolegal, and policy and organization. The majority of TM items on the NBME examinations focused either on the scientific basis of TM (37%) or on clinical transfusion (23%).

In 1989–1990 students tended to score better on TM items than on examination items generally, whereas in 1984–1985 they had tended to score about the same.

Discussion

The 1989–1990 NBME Part I and II tests clearly demonstrated a greater emphasis on TM content than did the 1984–1985 examinations. In particular, the large increase in TM items on Part II indicates a stronger representation of TM on the clinical portion of the examinations. The results of this study reflect a trend toward a clinical orientation for TM as the discipline moves from "the laboratory to the bedside."[1]

The improved performance on TM items may be related to several factors, including the increased awareness of HIV (human immunodeficiency virus) and AIDS and the infusion of additional resources by the National Heart, Lung, and Blood

Institute to support teaching activities in this area. Faculty and students are becoming increasingly aware of risks and safety issues in blood transfusion, the need for conservation of blood, and the growing practice of autologous blood transfusions. These factors have contributed to the increased numbers of clinical questions on the NBME examinations.

While some extraneous factors may have contributed to the changes on the NBME examinations (i.e., the NBME's selection of faculty panels who compile the NBME and the tests' increasingly interdisciplinary nature), the increases in TM content and student performance on TM items indicate that the growing emphasis on TM in U.S. medical school curricula, as well as on development of TM faculty, has been effective.

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Attitudes of Medical School Faculty toward Gifts from the Pharmaceutical Industry

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Abstract—The American Medical Association (AMA) has recently published guidelines for the receipt of gifts from industry representatives. To examine faculty members' attitudes toward that AMA policy as it pertains to gifts from the pharmaceutical industry, the authors surveyed the faculty of the University of Kentucky College of Medicine in 1991. Of 462 faculty members, 248 (54%) completed the questionnaires. The faculty generally agreed with the AMA guidelines. A majority of the faculty believed that personal relationships had the potential to influence prescribing patterns but that gifts, in general, did not greatly influence prescribing behaviors. Compared with the 169 M.D. faculty, the 69 Ph.D. faculty significantly favored more restrictive policies ($p < .001$). The authors discuss both the ethical considerations and the utility of guidelines for physician-industry interactions. *Acad. Med.* 67(1992):610-612.

Much controversy surrounds the issue of physicians' receiving gifts from pharmaceutical and other health industry representatives. The American Medical Association (AMA) and the American College of Physicians (ACP) have recently published guidelines for gifts to physicians from industry.[1,2] Other specialty societies have either adopted or endorsed the AMA's or the ACP's guidelines.[3-5]

Little systematic study has investigated whether pharmaceutical industry gifts influence physicians' prescribing habits. A survey of internal medicine faculty and residents found that the physicians generally had negative attitudes toward the clinical information provided by pharmaceutical representatives, and a majority favored eliminating pharmaceutical presentations at their hospitals.[6]

Medical school faculty members' acceptance of gifts and interaction with industry representatives may have far-reaching influence through the modeling of behavior to students and residents and through the dissemination of information in the role of an expert. The purpose of our study was to examine the attitudes of medical school faculty toward the AMA guidelines regarding gifts from industry representatives.

Method

A self-administered questionnaire was mailed to the 462 full-time fac-

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